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COSMIC

FEBRUARY MONTHLY REPORT

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Computer Software Management and Information Center
112 Barrow Hall — University of Georgia — Athens, Georgia 30602

UNIVERSITY OF GEORGIA

COMPUTER SOFTWARE MANAGEMENT

AND

INFORMATION CENTER

MONTHLY PROGRESS REPORT

February, 1983

UNDER CONTRACT

NASW-3247

March 15, 1983

PREPARED FOR

TECHNOLOGY UTILIZATION OFFICE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WASHINGTON, D. C.

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1. GENERAL INFORMATION

In February, the Director completed the first round of COSMIC seminar presentations at the NASA Centers. On February 8 the seminar was presented at Goddard Space Center, on the 10th at Lewis Research Center and on the 17th two sessions were presented at the Johnson Space Center. In total over 100 people attended these sessions.

The schedule for the April 83 release of NASTRAN has slipped a few weeks. We now anticipate beginning to release copies in April with the bulk of releases issued in May.

The workshop schedule has been finalized for the pre-colloquium activities. At this time the Introductory session on Monday, May 2 is nearly full. The concurrent sessions scheduled for Tuesday and Wednesday morning will be well attended but probably not full. A meeting room has been reserved for Wednesday morning, May 4 for the NAG meeting. Papers for presentation at the meeting are being submitted by the authors for publication in the proceedings.

COSMIC plans on exhibiting at the Design Engineering Show in Chicago March 28-31. Our new display booth will be used.

COSMIC has requested, through University Procurement, a DEC VAX 11/780 Computer System and an IBM Personal Computer. This equipment will be used in a number of applications including the program checkout and evaluation areas.

2. INVENTORY

The current inventory of programs available from COSMIC is the sum of the Class 1 and Class 2 programs in TABLE 1. "Issuability Status Summary." The total number of items submitted from each source since COSMIC began is given in the right hand column of TABLE 1. Numbers listed under the "Withdrawn" column reflect those packages for which return or discard authorization has been provided by the appropriate Technology Utilization Office.

TABLE 1. ISSUABILITY STATUS SUMMARY

July 1966 to Date

Center Mnemonic	Class 1	Class 2	Class 3	Class 4	In Process	Withdrawn	Total
ARC	33	10	6	6	0	28	83
COS	0	17	0	1	0	65	83
DOD	0	47	16	3	0	16	82
ERC	0	0	0	0	0	13	13
ERL	6	7	0	0	0	1	14
FRC	5	6	0	0	0	4	15
GSC	78	41	3	8	3	218	351
HQN	13	10	0	0	2	72	97
KSC	5	22	1	1	0	80	109
LAR	169	60	3	5	0	78	315
LEW	134	77	1	4	2	86	304
MFS	96	109	28	10	1	1093	1337
MSC	84	140	6	2	5	787	1024
NPO	81	50	6	5	2	244	388
NUC	9	6	0	0	0	60	75
WLP	0	0	0	0	0	11	11
WSO	0	0	0	0	0	3	3
Totals	713	602	70	45	15	2859	4304

The number of submittals for the current month is average. COSMIC received four initial packages (program and documentation), and two initial programs (no document included with submittal). Also, COSMIC received two additional packages, three additional documents, and one additional program. The total number of receipts for this month is twelve. A summary of the total number of receipts by submittal site is shown in TABLE 2.

TABLE 2. SUMMARY OF TOTAL RECEIPTS 1983

Submittal Site	This Month	Year to Date
ARC	0	0
COS	0	0
DOD	0	0
ERL	0	0
GSC	2	4
HQN	2	6
KSC	0	0
LAR	1	4
LEW	3	8
MFS	0	1
MSC	4	5
NPO	0	3
Total	12	31

3. EVALUATION AND PUBLICATION

The program processing activities can be viewed as a three step process, although the steps are not necessarily done in sequence. These steps are program verification, program evaluation, and abstract preparation and publication.

Program verification represents the machine processing phase of evaluation and typically includes the compilation or assembly of supplied code using standard programming language translators followed by loading or linkage editing of the generated object code to insure completeness of the submitted code. This month COSMIC processed fourteen programs through verification.

Program Evaluation involves the review of programs and supporting documentation following the machine processing phase to determine their suitability for public release relative to the standards of completeness and content specified in the COSMIC Submittal Guidelines. Prices for distributed materials are also established during package evaluation. Factors considered in establishing the price charged for program code include the program source instruction counts as a gross measure of development effort, the machine independence or vintage, the quality of the supporting documentation, the known or assumed sales potential for the package, the functionality of the program relative to comparably classified packages, and the demonstrated level of developer programming support.

The program evaluation activity for the current month totaled 11 packages; nine Class 1, one Class 2, zero Class 3, and one Class 4.

A cumulative tabulation of COSMIC evaluations since January 1, 1983, is given in TABLE 3.

TABLE 3. SUMMARY EVALUATION TOTALS

January 1983 to Date

Submittal Site	Class 1	Class 2	Class 3	Class 4
ARC	0	0	0	0
COS	0	0	0	0
DOD	0	0	0	0
ERC	0	0	0	0
ERL	0	0	0	0
FRC	0	0	0	0
GSC	1	0	0	2
HQN	4	0	0	0
KSC	0	0	0	1
LAR	4	0	0	0
LEW	4	0	0	3
MFS	1	0	0	1
MSC	0	1	0	0
NPO	3	0	0	0
NUC	0	0	0	0
WLP	0	0	0	0
Totals	17	1	0	7

Publication activities carried out by COSMIC include the preparation of descriptive abstracts for all new submittal and updated Class 1 and 2 items evaluated each month as well as the preparation of Tech Briefs for the Class 1 packages for publication in the NASA Tech Brief Journal.

Publication category codes and index terms are assigned to abstracts prepared by the activity. This month COSMIC prepared 7 abstracts and 3 Tech Briefs. A list of the titles for which Tech Briefs were prepared is given below:

TECH BRIEF ITEMS

LAR-12288 - Finite Element Computer Program to Analyze Cracked Orthotropic Sheets

LAR-12943 - RIM5 - Relational Information Management Data Base System (DEC VAX Version)

LAR-12944 - RIM5 - Relational Information Management Data Base System (PRIME Version)

LAR-12945 - RIM5 - Relational Information Management Data Base System (CDC Version)

LEW-12761 - SHABERTH - Computer Program for Calculation of Thermal Performance of a Shaft Bearing System

LEW-12973 - NASCAP - NASA Charging Analyzer Program

LEW-13626 - SPHERBEAN - Spherical Roller Bearing Analysis

NPO-16201 - SDDL - Software Design and Documentation Language (DEC VAX Version)

NPO-16202 - SDDL - Software Design and Documentation Language (Z80 Processor Version)

COSMIC PROGRAM ABSTRACT

LAR-12943

RIM5- Relational Information Management Data Base System (DEC VAX Version)
(Boeing Commercial Airplane Company/NASA Langley Research Center)

The Relational Information Management data base system, RIM5, resulted from a NASA project aimed at improving the technology of managing engineering information. RIM5, a general-purpose Data Base Management System (DBMS) suitable for a wide range of data processing applications, contains several features that make the system particularly useful to people working in scientific and engineering areas. RIM5's command language offers the user direct on-line or batch access to information retained in the data base. RIM5 is intended to be a fully relational DBMS with data stored in tables instead of in hierarchical or network relations. As new applications arise, the RIM5 data base can be easily modified, allowing the DBMS to change as needs change.

In the RIM5 data base system, data is stored in a two-dimensional table termed a relation. The table contains attributes of the relation and data occurences. The relations and their attributes are defined as the schema of the data base. A full selection of RIM5 commands permit the user to create, update, and query the data base. The data base structure is defined in terms of attributes, relations, constraints (rules), and passwords. Data in the RIM5 data base may be of fixed or variable length of the following types: text, integer, real, double precision, vectors (integer, real, double precision), and matrices (integer, real, double precision). The RIM5 user can easily load new relations, modify the data base, or modify the schema.

RIM5 commands are provided for querying the data base. Queries may contain up to ten conditions, including arithmetic and logical comparisions. The user can generate a tally for any attribute giving each unique value and the number of times it occurs in a relation. Simple functional values of an attribute that can be computed include minimum, maximum, average, and sum. Relational algebra commands allow the RIM5 user to create new relations from existing relations. RIM5 commands also provide the user with a limited report generator capability. Portions, or all, of a RIM5 data base may be off-loaded for communication to other computers supporting RIM5.

The RIM5 program is designed as a stand-alone system and can be executed in a menu mode or a command mode. In the menu mode, the user is prompted for the inputs required to

create, update, and query the data base. The menu mode offers the inexperienced user assistance and a chance to get acquanited with the RIM5 commands. In the command mode, RIM5 commands are directly input by the user. An extensive on-line HELP facility is available to both the new and experienced user. RIM5 can also be interfaced with any application program that is written in a language capable of calling FORTRAN routines. RIM5 offers the data base manager a password feature that can be used to restrict access to data and to restrict the use of RIM5 commands.

RIM5 is written in FORTRAN 77 for interactive or batch execution and has been implemented on a DEC VAX-11/780 computer under VMS 3.0. RIM5 was developed in 1981.

LANGUAGE: FORTRAN 77

MACHINE REQUIREMENTS: DEC VAX-11/780

PROGRAM SIZE: Approximately 51,000 Source Statements

DISTRIBUTION MEDIA: 9 Track 1600 BPI DEC VAX Files-11 Format Magnetic Tape

PROGRAM NUMBER: LAR-12943

DOCUMENTATION PRICE: $25.00 PROGRAM PRICE: $2,800.00

COSMIC PROGRAM ABSTRACT

LAR-12944

RIM5- Relational Information Management Data Base System (PRIME Version)
(Boeing Commercial Airplane Company/NASA Langley Research Center)

The Relational Information Management data base system, RIM5, resulted from a NASA project aimed at improving the technology of managing engineering information. RIM5, a general-purpose Data Base Management System (DBMS) suitable for a wide range of data processing applications, contains several features that make the system particularly useful to people working in scientific and engineering areas. RIM5's command language offers the user direct on-line or batch access to information retained in the data base. RIM5 is intended to be a fully relational DBMS with data stored in tables instead of in hierarchical or network relations. As new applications arise, the RIM5 data base can be easily modified, allowing the DBMS to change as needs change.

In the RIM5 data base system, data is stored in a two-dimensional table termed a relation. The table contains attributes of the relation and data occurences. The relations and their attributes are defined as the schema of the data base. A full selection of RIM5 commands permit the user to create, update, and query the data base. The data base structure is defined in terms of attributes, relations, constraints (rules), and passwords. Data in the RIM5 data base may be of fixed or variable length of the following types: text, integer, real, double precision, vectors (integer, real, double precision), and matrices (integer, real, double precision). The RIM5 user can easily load new relations, modify the data base, or modify the schema.

RIM5 commands are provided for querying the data base. Queries may contain up to ten conditions, including arithmetic and logical comparisions. The user can generate a tally for any attribute giving each unique value and the number of times it occurs in a relation. Simple functional values of an attribute that can be computed include minimum, maximum, average, and sum. Relational algebra commands allow the RIM5 user to create new relations from existing relations. RIM5 commands also provide the user with a limited report generator capability. Portions, or all, of a RIM5 data base may be off-loaded for communication to other computers supporting RIM5.

The RIM5 program is designed as a stand-alone system and can be executed in a menu mode or a command mode. In the menu mode, the user is prompted for the inputs required to create,

update, and query the data base. The menu mode offers the inexperienced user assistance and a chance to get acquanited with the RIM5 commands. In the command mode, RIM5 commands are directly input by the user. An extensive on-line HELP facility is available to both the new and experienced user. RIM5 can also be interfaced with any application program that is written in a language capable of calling FORTRAN routines. RIM5 offers the data base manager a password feature that can be used to restrict access to data and to restrict the use of RIM5 commands.

The PRIME version of RIM5 is written in FORTRAN 77 for interactive or batch execution and has been implemented on a PRIME 700 series computer. The RIM5 system was developed in 1981.

LANGUAGE: FORTRAN 77

MACHINE REQUIREMENTS: PRIME 700 Series

PROGRAM SIZE: Approximately 51,000 Source Statements

DISTRIBUTION MEDIA: 9 Track 800 BPI ASCII Card Image Format Magnetic Tape

PROGRAM NUMBER: LAR-12944

DOCUMENTATION PRICE: $19.00 PROGRAM PRICE: $2,800.00

COSMIC PROGRAM ABSTRACT

LAR-12945

RIM5- Relational Information Management Data Base System (CDC Version)
(Boeing Commercial Airplane Company/NASA Langley Research Center)

The Relational Information Management data base system, RIM5, resulted from a NASA project aimed at improving the technology of managing engineering information. RIM5, a general-purpose Data Base Management System (DBMS) suitable for a wide range of data processing applications, contains several features that make the system particularly useful to people working in scientific and engineering areas. RIM5's command language offers the user direct on-line or batch access to information retained in the data base. RIM5 is intended to be a fully relational DBMS with data stored in tables instead of in hierarchical or network relations. As new applications arise, the RIM5 data base can be easily modified, allowing the DBMS to change as needs change.

In the RIM5 data base system, data is stored in a two-dimensional table termed a relation. The table contains attributes of the relation and data occurences. The relations and their attributes are defined as the schema of the data base. A full selection of RIM5 commands permit the user to create, update, and query the data base. The data base structure is defined in terms of attributes, relations, constraints (rules), and passwords. Data in the RIM5 data base may be of fixed or variable length of the following types: text, integer, real, double precision, vectors (integer, real, double precision), and matrices (integer, real, double precision). The RIM5 user can easily load new relations, modify the data base, or modify the schema.

RIM5 commands are provided for querying the data base. Queries may contain up to ten conditions, including arithmetic and logical comparisions. The user can generate a tally for any attribute giving each unique value and the number of times it occurs in a relation. Simple functional values of an attribute that can be computed include minimum, maximum, average, and sum. Relational algebra commands allow the RIM5 user to create new relations from existing relations. RIM5 commands also provide the user with a limited report generator capability. Portions, or all, of a RIM5 data base may be off-load for communication to other computers supporting RIM5.

The RIM5 program is designed as a stand-alone system and can be executed in a menu mode or a command mode. In the menu mode, the user is prompted for the inputs required to

create, update, and query the data base. The menu mode offers the inexperienced user assistance and a chance to get acquanited with the RIM5 commands. In the command mode, RIM5 commands are directly input by the user. An extensive on-line HELP facility is available to both the new and experienced user. RIM5 can also be interfaced with any application program that is written in a language capable of calling FORTRAN routines. RIM5 offers the data base manager a password feature that can be used to restrict access to data and to restrict the use of RIM5 commands.

The RIM5 program is written in FORTRAN and ASSEMBLER for interactive or batch execution and has been implemented on a CDC CYBER 170 series computer with a central memory requirement of approximately 120K(octal) of 60 bit words. RIM5 was developed in 1981.

LANGUAGE: FORTRAN V (95%); ASSEMBLER (5%)

MACHINE REQUIREMENTS: CDC CYBER 170 Series

PROGRAM SIZE: Approximately 53,500 Source Statements

DISTRIBUTION MEDIA: 9 Track 800 BPI CDC NOS Internal Format Magnetic Tape

PROGRAM NUMBER: LAR-12945

DOCUMENTATION PRICE: $23.00 PROGRAM PRICE: $2,800.00

COSMIC PROGRAM ABSTRACT

LEW-13626

SPHERBEAN- Spherical Roller Bearing Analysis
(SKF Industries, Inc.)

The need to extend the operating regime for spherical roller bearings requires a detailed understanding of, and the ability to predict, bearing performance within a load support system. The complexity of the interactions between the load support system and its environment requires an analysis and design tool to accurately describe the thermomechanical dialogue present. The Spherical Roller Bearing Analysis program, SPHERBEAN, predicts the thermomechanical characteristics of double row spherical roller bearings over a wide range of operating conditions. The analysis allows six degrees of freedom for each roller and three for each half of an optionally split cage. SPHERBEAN provides enough generality to obtain detailed simulations of both high speed and conventional bearing operation. Emphasis has been placed on detailing the effects of roller skew, roller to flange contact, and changes in clearance as functions of speed, mounting fits, and temperature.

SPHERBEAN can be used to compute bearing performance at constant temperature as a function of physical dimensions, material properties, and operating conditions. A complete range of elastohydrodynamic (EHD) contact considerations is included in the computation of raceway and flange contact detail. SPHERBEAN can address quasidynamic equilibrium with consideration of EHD and HD forces at the raceway and flange, cage skew control, heat generation, and centrifugal loads for single or double row designs having up to 30 rollers per row. A flexible outer ring option is available for simulation of planet bearing performance. Effects of carrier motion on bearing performance are accomodated by considering the centrifugal forces generated by the kinematics of planetary motion.

SPHERBEAN may also be used to compute the time transient and steady state thermal performance within a system defined by the bearing and its environment. In the steady state mode SPHERBEAN formulates the conservation of energy equations for an equivalent nodal model of the bearing and surrounding hardware. Heat generated at sources such as neighboring seals or gears may be included. A Newton-Raphson method is used to

solve the nonlinear conservation of energy equations for system temperatures. The resulting system temperatures are used to compute bearing performance, including bearing heat generation rate. In the time transient mode, SPHERBEAN will formulate and solve a system of first order nonlinear differential equations.

SPHERBEAN is written in ASCII FORTRAN for batch execution and has been implemented on a UNIVAC 1100 computer with a central memory requirement of approximately 90K of 36 bit words. The SPHERBEAN program was developed in 1980.

LANGUAGE: FORTRAN 77

MACHINE REQUIREMENTS: UNIVAC 1100 Series

PROGRAM SIZE: Approximately 13,600 Source Statements

DISTRIBUTION MEDIA: 9 Track 800 BPI UNIVAC FURPUR Format Magnetic Tape

PROGRAM NUMBER: LEW-13626

DOCUMENTATION PRICE: $54.00 PROGRAM PRICE: $1,835.00

COSMIC PROGRAM ABSTRACT

MSC-20482

Generalized Pseudoinverse of a Rectangular Matrix
(Rockwell International Corporation)

This computer program was developed to enable the user to consider all of the information in a redundant set of simultaneous equations. Eigen-value and eigen-vector techniques are utilized to construct the pseudoinverse of a rectangular matrix. The generated pseudoinverse represents the best statistical solution for overdeterminant or indeterminant sets of simultaneous equations. The pseudoinverse also offers the user insight into the behavior of the solution of an indeterminate system of equations.

This program is written in FORTRAN 77 for batch execution and has been implemented on a CDC CYBER 170 series computer with a minimum central memory requirement of approximately 60K (octal) of 60 bit words. This program was developed in 1981.

LANGUAGE: FORTRAN 77

MACHINE REQUIREMENTS: CDC CYBER 170 Series

PROGRAM SIZE: Approximately 820 Source Statements

DISTRIBUTION MEDIA: 9 Track 800 BPI EBCDIC Card Image Format Magnetic Tape

PROGRAM NUMBER: MSC-20482

DOCUMENTATION PRICE: $9.00 PROGRAM PRICE: $200.00

COSMIC PROGRAM ABSTRACT

NPO-16201

SDDL- Software Design and Documentation Language (DEC VAX Version) (Cal Tech/JPL)

Effective, efficient communication is an essential element of the software development process. The Software Design and Documentation Language (SDDL) provides an effective communication medium to support the design and documentation of complex software applications. SDDL supports communication between all the members of a software design team and provides for the production of informative documentation on the design effort. Even when an entire development task is performed by a single individual, it is important to explicitly express and document communication between the various aspects of the design effort including concept development, program specification, program development, and program maintenance. SDDL ensures that accurate documentation will be available throughout the entire software life cycle. SDDL offers an extremely valuable capability for the design and documentation of complex programming efforts ranging from scientific and engineering applications to data management and business sytems.

Throughout the development of a software design, the SDDL generated Software Design Document always represents the definitive word on the current status of the ongoing, dynamic design development process. The document is easily updated and readily accessible in a familiar, informative form to all members of the development team. This makes the Software Design Document an effective instrument for reconciling misunderstandings and disagreements in the development of design specifications, engineering support concepts, and the software design itself. Using the SDDL generated document to analyze the design makes it possible to eliminate many errors that might not be detected until coding and testing is attempted. As a project management aid, the Software Design Document is useful for monitoring progress and for recording task responsibilities.

SDDL is a combination of language, processor, and methodology. The SDDL syntax consists of keywords to invoke design structures and a collection of directives which control processor actions. The designer has complete control of over the choice of keywords, commanding the capabilities of the processor in a way which is best suited to communicating the intent of the design. The SDDL processor translates the designer's creative

thinking into an effective document for communication. The processor performs as many automatic functions as possible, thereby freeing the designer's energy for the creative effort. Document formatting includes graphical highlighting of structure logic, accentuation of structure escapes and module invocations, logic error detection, and special handling of title pages and text segments. The SDDL generated document contains software design summary information including module invocation hierarchy, module cross refence, and cross reference tables of user selected words or phrases appearing in the document. The basic forms of the methodology are module and block structures and the module invocation statement. A design is stated in terms of modules that represent problem abstractions which are complete and independent enough to be treated as separate problem entities. Blocks are lower-level structures used to build the modules. Both kinds of structures may have an initiator part, a terminator part, an escape segment, or a substructure.

The SDDL processor is written in Pascal for batch execution and has been implemented on a DEC VAX-11/780 computer with VMS. The Pascal version of the SDDL processor was developed in 1981.

LANGUAGE: PASCAL

MACHINE REQUIREMENTS: DEC VAX Series

PROGRAM SIZE: Approximately 4,235 Source Statements

DISTRIBUTION MEDIA: 9 Track 800 BPI DEC VAX Files-11 Format Magnetic Tape

PROGRAM NUMBER: NPO-16201

DOCUMENTATION PRICE: $40.00 PROGRAM PRICE: $855.00

COSMIC PROGRAM ABSTRACT

NPO-16202

SDDL- Software Design and Documentation Language (Z80 Version)
(Cal Tech/JPL)

Effective, efficient communication is an essential element of the software development process. The Software Design and Documentation Language (SDDL) provides an effective communication medium to support the design and documentation of complex software applications. SDDL supports communication between all the members of a software design team and provides for the production of informative documentation on the design effort. Even when an entire development task is performed by a single individual, it is important to explicitly express and document communication between the various aspects of the design effort including concept development, program specification, program development, and program maintenance. SDDL ensures that accurate documentation will be available throughout the entire software life cycle. SDDL offers an extremely valuable capability for the design and documentation of complex programming efforts ranging from scientific and engineering applications to data management and business sytems.

Throughout the development of a software design, the SDDL generated Software Design Document always represents the definitive word on the current status of the ongoing, dynamic design development process. The document is easily updated and readily accessible in a familiar, informative form to all members of the development team. This makes the Software Design Document an effective instrument for reconciling misunderstandings and disagreements in the development of design specifications, engineering support concepts, and the software design itself. Using the SDDL generated document to analyze the design makes it possible to eliminate many errors that might not be detected until coding and testing is attempted. As a project management aid, the Software Design Document is useful for monitoring progress and for recording task responsibilities.

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The SDDL processor is written in Pascal for batch execution and has been implemented on a Z80 based microcomputer under CP/M. The Pascal version of the SDDL processor was developed in 1981.

LANGUAGE: PASCAL

MACHINE REQUIREMENTS: Z80 Based System with CP/M

PROGRAM SIZE: Approximately 3,000 Source Statements

DISTRIBUTION MEDIA: 8 Inch Single-Density CP/M Format Diskette

PROGRAM NUMBER: NPO-16202

DOCUMENTATION PRICE: $40.00 PROGRAM PRICE: $370.00

4. MARKETING

The marketing activities performed by COSMIC involve: solicitation of gratis advertisement of computer programs available from COSMIC in the technical press and trade journals; attendance at trade shows and professional society meetings to promote the services and software available from COSMIC; utilization of various media for the general promotion of COSMIC; utilization of benefits analysis reports to highlight COSMIC's technology transfer function; and preparation of abstract collections and program summaries.

A continuing marketing activity emphasized by COSMIC is the solicitation of gratis announcements of selected COSMIC programs in trade and technical publications. In February, announcements about COSMIC products were published in:

Computerworld (Feb. 7 issue)	MSC-20423 VAX Security Package
Computerworld (Feb. 14 issue)	COSMIC Software Catalog
ICP Interface (Feb. issue)	NPO-15862 SOFTCOST

News releases concerning COSMIC's attendance at the DEXPO in St. Louis during May were sent to thirteen publications for later announcement. Also, news releases for DISCOS (GSC-12422) and SAMSAN (GSC-12827) were sent to "Electronic Desing". And finally, information concerning the following programs:

ARC-11446	Hidden Line Code
DOD-00072	UPLOTE
LAR-11877	Computer Program for Generating Contour Plots
GSC-12326	WCPP
HQN-10921	NASA Graphics Display

was sent to the "Data Decisions Directory".

5. CUSTOMER SERVICE

Customer Service provided by COSMIC, in addition to the distribution of program code and documentation, includes responding to requests for information. These requests may be in the form of telephone calls, letters, TECH BRIEF cards, mini-brochure cards, or trade show return cards. Generally the requested information concerns the services provided by COSMIC, or information on specific programs or groups of programs which may be available from COSMIC. During February, a total of 976 information requests were processed. This was divided into 942 domestic requests and 34 international requests.

One other area of Customer Service is the response to requests for information relevant to problems associated with a particular program product installation. These requests are usually handled jointly with the Technical Service Staff. After the customer problems have been resolved, a Problem Report Sheet is processed and added to the program package file for future reference. One problem report was processed this month.

During the month of February, a total of 304 customers representing 274 organizations received materials (programs, documentation, or catalogs) from COSMIC. Customers represent individuals, whereas, organizations represent corporations or institutions. These customers are located in 40 different states or territories. Both NASA and non-NASA disseminations are reflected in these statistics.

6. BENEFITS IDENTIFICATION

COSMIC follows an active campaign of interviewing previous customers in order to ascertain the utility of distributed programs and identify specific benefits accruing to users of these programs. Additionally, contact with customers is used to evaluate the services provided by COSMIC. When notable benefits are identified, they are documented in reports written by COSMIC staff which are then approved for public release by the customers. Two benefits reports are in the process of being authorized for release. One benefits report was released for publication this month.

COSMIC

NASA National Aeronautics and Space Administration

SOFTWARE BENEFITS REPORT

The following report describes one application of software developed as part of a project funded by the National Aeronautics and Space Administration. The Computer Software Management and Information Center (COSMIC) operates as an extension of NASA's Technology Utilization Program to supply NASA computer programs to other agencies and the private sector. For additional information on this or other NASA software packages, call or write COSMIC.

Program Title: Hidden Line Computer Code

Program Number: ARC-11446

NASA Center: NASA Dryden Flight Research Facility

Early in 1982, the Rowland Institute for Science began operations in Cambridge, Massachusetts, as a non-profit center for basic scientific research. Projects planned at present for the Institute range from work on the physics of color vision to an examination of the structure of biologically important molecules.

To generate accurate three-dimensional drawings of these molecule structures, Rowland chemists have used the Hidden Line Computer Code developed at the NASA Dryden Flight Research Facility. This program allows them to visually represent molecule shapes, including new combinations of chemical elements. The removal of hidden or overlapping lines results in drawings that have no ambiguities of perspective that could be misinterpreted and gives an accurate image of the molecular structure.

7. MAINTENANCE AND SUPPORT

Sperry has solved sixty-eight (68) SPR's which have been incorporated into the next release of NASTRAN. Sperry has also incorporated the following new capabilities into NASTRAN:

- BANDIT
- NSRDC Stress Averaging Capability
- MSFC Hydroelastic Capability
- Converting the UNIVAC to ASCII
- Hidden Line Capability
- Elbow Element

All of these enhancements have been tested in the UNIVAC version of NASTRAN. Sperry also began the task of generating the source tapes for the other three versions.

The next release of NASTRAN is scheduled for April 1983. During March, the generation of the four versions of NASTRAN will take place at the various NASA centers.

All of the pre-colloquium activities for the Eleventh NASTRAN User's Colloquium in San Francisco are on schedule. An agenda for the colloquium and associated workshops was prepared and has been mailed to all the attendees of the special courses.

During the month, assistance was given to several lessees on problems encountered with NASTRAN.

TABLE 4 TOTAL DISSEMINATIONS

ITEM	Current Month VOLUME	Current Month VALUE	Year to Date VOLUME	Year to Date VALUE
A. ITEMS INVOICED				
1. Programs	32	$29,280.00	80	$68,850.00
2. Documentation	113	4,504.50	240	9,491.00
3. Leases (Initial)	7	25,390.00	9	33,690.00
4. Leases (Renewals)	4	16,800.00	10	41,160.00
5. Leases (Misc.)	-	-	4	1,066.66
6. Catalogs	205	6,590.00	381	8,585.00
7. Miscellaneous	17	804.51	28	1,308.74
TOTAL INVOICED		$83,369.01		$164,151.44
B. NASA (No Charge)				
1. Programs	5	$ 7,020.00	8	$ 8,380.00
2. Documentation	10	708.50	20	962.50
3. Leases (Initial)	1	1,800.00	1	1,800.00
4. Leases (Renewals)	11	38,640.00	11	38,640.00
5. Leases (Misc.)	-	-	-	-
6. Catalogs	17	250.00	21	290.00
7. Miscellaneous	-	-	1	100.00
TOTAL NASA		$48,418.50		$50,172.50
C. OTHER (No Charge)				
1. Catalogs	12	$ 210.00	12	$ 210.00
2. Replacements	-	-	-	-
3. Miscellaneous	-	-	-	-
TOTAL OTHER		$ 210.00		$ 210.00
GRAND TOTAL DISSEMINATION		$131,997.51		$214,533.94

TABLE 5 NASTRAN DISSEMINATIONS

Item	Current Month		Year to Date	
	VOLUME	VALUE	VOLUME	VALUE
A. ITEMS INVOICED				
1. Leases Initial	4	$16,240.00	4	$16,240.00
2. Leases Renewals	4	16,800.00	10	41,160.00
3. Leases Misc.	-	-	-	-
4. Documentation	27	1,145.00	50	2,610.00
5. Miscellaneous	3	161.20	4	227.65
TOTAL NASTRAN INVOICED		$34,346.20		$60,237.65
B. NASA (No charge)				
1. Leases Initial	-	-	-	-
2. Leases Renewals	11	$38,640.00	11	$38,640.00
3. Leases Misc.	-	-	-	-
4. Documentation	-	-	4	80.00
5. Miscellaneous	-	-	-	-
TOTAL NASA NASTRAN		$38,640.00		$38,720.00
GRAND TOTAL NASTRAN		$72,986.20		$98,957.65

TABLE 6 DISSEMINATION OF DOD SUBMITTALS

Item	Current		Year to Date	
	VOLUME	VALUE	VOLUME	VALUE
1. Programs	3	$2,535.00	6	$3,810.00
2. Documentation	5	83.50	11	228.50
TOTAL DISSEM. DOD SUBMITTALS		$2,618.50		$4,038.50

TABLE 7 FOREIGN DISSEMINATIONS

Item	Current		Year to Date	
	VOLUME	VALUE	VOLUME	VALUE
1. Programs	1	$2,250.00	19	$27,800.00
2. Documentation	12	1,179.00	33	2,264.00
3. Leases Initial	-	-	1	7,000.00
4. Leases Renewal	-	-	-	-
5. Leases Misc.	-	-	1	35.70
6. Catalogs	38	2,000.00	46	2,275.00
7. Miscellaneous	9	209.89	16	461.34
TOTAL FOREIGN DISSEM.		$5,638.89		$39,836.04

9. BUDGET SUMMARY

CONTRACT NASW-3247

February 1983

	ESTIMATED EXPENDITURES		ACTUAL EXPENDITURES	
	Current Mo.	Cumulative	Current Mo.	Cumulative
PERSONNEL	20,673.00	41,346.00	21,137.40	42,210.05
OVERHEAD	19,584.00	39,168.00	12,327.50	24,669.33
STAFF BENEFITS	4,942.00	9,884.00	5,051.18	10,102.36
TRAVEL	1,719.00	3,438.00	412.82	1,053.13
EQUIPMENT PURCHASE	400.00	800.00	179.95	179.95
EQUIPMENT RENTAL				
Computer Usage	8,000.00	16,000.00	4,045.80	9,375.39
Misc. Equipment	1,853.00	3,706.00	1,644.55	2,233.36
MATERIALS & SUPPLIES	6,421.00	12,842.00	16,429.91	19,455.38
COMMUNICATIONS	1,206.00	2,412.00	1,309.60	2,747.37
OTHER				
Duplicating Expenses	-0-	-0-	-0-	-0-
Promotional Expenses	688.00	1,376.00	439.27	3,429.23
Microfiche Expenses	599.00	1,198.00	1,133.05	1,133.05
TOTALS	66,085.00	132,170.00	64,111.03	116,588.60
MAINTENANCE & SUPPORT EXPENSE	27,448.00	54,896.00	27,560.12	65,918.14
GRAND TOTALS	93,533.00	187,066.00	91,671.15	182,506.74

	ESTIMATED		ACTUAL	
	Current Mo.	Cumulative	Current Mo.	Cumulative
INCOME	65,145.00	130,290.00	79,074.33	207,643.81